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EXAMINER	
SURVILLO, OLEG	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/622,217	ZUBERI, KHAWAR M.	
	Examiner	Art Unit	
	OLEG SURVILLO	2442	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 August 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,7-12,14-19,21-26 and 28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,7-12,14-19,21-26 and 28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Comments Regarding Examination

1. Applicant's amendments to independent claims 1, 8, 15, and 22 to address Examiner's comments made in the last Office action, are acknowledged with appreciation. Attached to this Office action are proposed amendments to independent claims 1, 8, 15, 22, and various dependent claims that would provide a proper antecedent basis for certain limitations, correct minor informalities and formatting issues, maintain consistency between four sets of claims, and clearly indicate timing of events. It is noted that the proposed claim amendments are for the sole purpose of correcting problems mentioned just above.

Response to Amendment

2. Claims 1-5, 7-12, 14-19, 21-26, and 28 remain pending in the application. Claims 1, 7, 8, 14, 15, 21, 22, and 28 are currently amended. Claims 6, 13, 20, and 27 have been canceled. No new claims have been added.

Response to Arguments

3. With regard to the Applicant's remarks dated August 21, 2008:

regarding the rejection of claim 1 under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Craft, Applicant's arguments have been fully considered but they are generally not persuasive, unless noted otherwise. At page 10 of the Remarks, as filed, Applicant argues, *inter alia*, that there is only one portion in Craft where direct

memory access is mentioned. *"Claim 1 recites that the first network interface controller and the second network interface controller operate under a remote direct memory access (RDMA) protocol rather than the direct memory access (DMA)"*. This argument is not persuasive. While it is true that Craft does not explicitly show utilizing RDMA, it would have been obvious to do so in combination with AAPA, which states at par. [0003] that: *"RDMA is a protocol which allows the NIC card to place a data packet in a predetermined memory location in the computer systems main memory".* In other words, RDMA protocol allows for DMA. Thus, the fact that Craft does not recite utilizing RDMA protocol for DMA transfer does not preclude NICs of Craft from doing so in combination with AAPA. At page 11 of the Remarks, as filed, Applicant argues that: *"Craft describes sending the packet that the INIC 22 cannot process to the INIC device driver. By contrast, claim 1 recites sending the message indicating the reception of the identifier associated with the memory location in the multiple network interface device and the associated data field. While it is not entirely clear from the Office action whether it refers to the packet as the message indicating the reception of the identifier or as the identifier itself, it appears that nowhere in the reference does Craft teach or suggest this limitation"*. This argument is not persuasive. The Office action was clear in referring to the packet as the message indicating the reception of the identifier. The Office action also referred to the packet as inherently containing the identifier in the header section of the packet. The fact that Craft does not explicitly discuss having an identifier in the header section of the packet, and just broadly discusses generating the packet summary and comparing a hash of the packet summary with the hash table

corresponding to the CCB, should not be taken as an indication that such identifier does not exist in the packet of Craft. However, in order to obviate Applicant's concerns regarding lack of identifiers in Craft's packets, Oesterreicher reference is used in this Office action to explicitly show that a data packet includes an identifier in the header of the packet. If Applicant believes that the claimed "message indicating the reception of the identifier" is structurally and functionally different from the packet that is sent from INIC 22 to the INIC device driver, the claim should be amended to further specify what constitutes "the message". At page 12 of the Remarks, as filed, Applicant argues that: *"the packet described in Craft is different from an identifier associated with a memory location in the multiple network interface device"*. This argument is not persuasive because the claim language is lacking specificity as to how the claimed "identifier associated with the memory location" is structurally and functionally different from an identifier inherently contained in the packet summary of Craft. Also, it is being noted that Applicant attempts to argue against the references individually, wherein the rejection of claim 1 was based on a combination of references: AAPA and Craft. To this extent, AAPA clearly shows an identifier associated with a memory location in the multiple network interface device, the identifier contained in the data packet transmitted between NICs of two machines. See cited paragraphs of AAPA. Applicant presented no arguments pertaining to the combination of AAPA and Craft. At page 13 of the Remarks, as filed, Applicant argues that: *"in Craft, the ATCP stack 52 processes the packet. Further, Craft states that* ***after*** *the packet had been processed, the CCB can be handed out to the INIC 22. By contrast, claim 1 recites that the second network interface*

controller transmits the associated data field to the memory location. Thus, Craft does not teach or suggest that the second network interface controller transmits the associated data field to the memory location, as recited in claim 1". This argument is persuasive.

As to claim 15, at page 14 of the Remarks, as filed, Applicant argues that: *"neither the Admitted Art nor Craft teaches or suggests "transmitting the memory location associated with the identifier to the second network interface controller, wherein the second network interface controller transmits the associated data field to the memory location", as recited in claim 15"*. This argument is persuasive.

As to claim 8, at page 16 of the Remarks, as filed, Applicant argues that: *"Craft does not teach or suggest "the identifier generated by the first network interface controller and associated with a memory location in the host computer," as recited in claim 8. Further, Craft does not teach or suggest "sending a message to a program component indicating the reception of the identifier," as also recited in claim 8"*. This argument is not persuasive for the same reasons as those discussed above with respect to claim 1 and which are not repeated here for brevity. At page 17 of the Remarks, as filed, Applicant argues that: *"Starr does not teach or suggest the identifier generated by the first network interface controller and associated with a memory location in the host computer recited in claim 1"*. This argument is not persuasive because Applicant attempts to argue against the references individually, wherein the rejection of claim 8 was based on a combination of references: AAPA, Craft, Starr, and Recio. To this extent, AAPA clearly shows an identifier generated by the first network

interface controller and associated with a memory location in the host computer, the identifier contained in the data packet transmitted between NICs of two machines. See cited paragraphs of AAPA. Applicant presented no arguments pertaining to the combination of AAPA, Craft, and Starr. At page 18 of the Remarks, as filed, Applicant argues that: *"it is not clear why one of skill in the art would invalidate the packet summary describing the packet headers when the packet summary does not match a CCB when, in such scenario, the headers are processed by the CPU"*. In their argument at this page of the Remarks, Applicant appears to analyze the combination of Craft and Starr teachings and the motivation for invalidating the identifier in the packet summary of Craft and Starr. However, Applicant completely ignores the teachings of AAPA relied on as a primary reference, in particular those pertaining to teaching of identifiers generated by the first network interface controller and associated with memory locations in multiple network interface device memory. See cited paragraphs of AAPA. Therefore, Applicant is reminded that one cannot show nonobviousness by attacking references individually where the rejections are based on combination of references. To this extent, it would have been obvious to one of ordinary skill in the art at the time of the invention to invalidate the identifiers of AAPA, wherein these identifiers are contained in the packet summary of Craft and/or Starr teachings, as a result of the combination of these references.

As to any arguments not specifically addressed, they are the same as those discussed above.

Claim Objections

4. Claims 1-5, 7-12, 14-19, 21-26, and 28 are objected to because of the following informalities:

see proposed claim amendments attached to this Office action.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 5, 7, 15, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art (hereinafter *AAPA*) in view of Craft et al. (US Patent No.: 6,687,758 B2) in view of Oesterreicher et al. (US 2004/0006636 A1) and in further view of Boucher et al. (2004/0240435 A1).

As to claim 1, the preamble has been given patentable weight since the claim body refers back to the preamble. See "the first network interface controller" and "the multiple network interface device" at lines 1-2 of the claim body.

As to claim 1, AAPA shows a method for transferring control between a first network interface controller and at least a second network interface controller in a multiple network interface device [as the route the data takes through the Internet changes, it is possible that the path chosen from the first machine to the second

machine will change in a manner that causes the path between these two machines to change from NIC 1 to NIC2 in machine 1] (par. [0005]), the method comprising:

after the first network interface controller sends an identifier [STag] associated with a memory location in the multiple network interface device [the protocol associates the memory in the first machine with a handle referred to as a STag. ...a NIC in the first machine generates the STag. The STag is then sent to the second machine] (par. [0004]), to a second device [the STag is then sent to the second machine] (par. [0004]) and the identifier and an associated data field are received by the second network interface controller in the multiple network interface device from the second device […the route changes to one which uses NIC 2 before machine 2 sends data to machine 1, machine 2 will return data with an STag that is unknown to NIC 2] (par. [0005]).

AAPA also shows that the second network interface controller has no knowledge of the identifier and the associated data field [returned data with an STag is unknown to NIC 2] (par. [0005]), and wherein the first network interface controller and the second network interface controller operate under a remote direct memory access (RDMA) protocol (par. [0003]-[0005]). AAPA further shows that identifiers are generated by the first network interface controller and are associated with memory locations in multiple network interface device memory [the protocol associates the memory in the first machine with a handle referred to as a STag. …a NIC in the first machine generates the STag].

AAPA does not show the particular steps recited in the claim for handling identifiers generated by one NIC and received by another NIC in the same machine, in

cases when control is transferred [paths changed] between a first network interface controller and at least a second network interface controller in a multiple network interface device.

In particular, AAPA does not show:

receiving a message from the second network interface controller in the multiple network interface device by a program component of the multiple network interface device, the message indicating the reception of the identifier and the associated data field from the second device;

passing the identifier to the program component;

querying the first network interface controller to supply the program component with a list of identifiers;

identifying, by the program component, that the first network interface controller generated the identifier; and

transmitting the memory location associated with the identifier to the second network interface controller, wherein the second network interface controller transmits the associated data field to the memory location.

Craft shows a method for transferring control between a first network interface controller and at least a second network interface controller in a multiple network interface device (abstract, col. 6 lines 36-42), the method comprising:

receiving a message [the packet] from the second network interface controller in the multiple network interface device [INIC 22 sends the packet that it cannot process according to the fast-path connection to the INIC device driver] (col. 6 lines 43-47) by a

program component of the multiple network interface device [at least one or more of the INIC device driver (64), the ATCP stack (62), and the port aggregation driver (66)] (Fig. 1), the message indicating the reception of the identifier and the associated data field [the packet includes a header portion inherently containing an identifier and a data portion] from the second device, wherein the second network interface controller has no knowledge of the identifier and the associated data field [INIC 22 sends the packet that it cannot process according to the fast-path connection to the INIC device driver, which alerts the port aggregation driver (66) of fast-path connection migration] (col. 5 lines 30-34);

passing the identifier to the program component [passing the packet that inherently contains the identifier in the header portion of the packet to the INIC device driver] (col. 4 lines 30-43; col. 6 lines 43-47);

querying the first network interface controller to supply the program component with a list of identifiers [commanding the INIC 25 to flush the fast-path CCB back to the ATCP stack, wherein CCB contains a list of identifiers] (col. 3 line 59 to col. 4 line 9; col. 6 lines 47-53);

identifying, by the program component, that the first network interface controller generated the identifier [the ATCP stack maintains a list of the CCBs that have been offloaded to INICs] (col. 6 lines 47-49); and

transmitting the memory location associated with the identifier to the second network interface controller [commanding the INIC 25 to flush the fast-path CCB back to the ATCP stack for processing the packet, and subsequently handing out the CCB to

the INIC 22, which is now associated with the connection] (col. 6 lines 54-57), wherein the [program component] transmits the associated data field to the memory location (col. 6 lines 53-57).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of AAPA and those of Craft, as discussed above, in order to provide a method of handling received packets when a packet received by one NIC is being handled by other NIC in the same device (col. 6 lines 36-42 in Craft).

AAPA in view of Craft does not explicitly show a packet containing an identifier in a header portion of the packet.

Oesterreicher shows that a packet contains an identifier in a header portion of the packet (par. [0034]; Fig. 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of AAPA in view of Craft by explicitly showing that a packet contains an identifier in a header portion of the packet, in order to determine which device generated and transmitted the packet and where to place the packet data upon reception of the packet.

AAPA in view of Craft and in further view of Oesterreicher does not show that the second network interface controller transmits the associated data field to the memory location.

As discussed above, Craft shows that the program component transmits the associated data field to the memory location.

Boucher shows transmitting the memory location associated with the identifier to the second network interface controller (par. [0018], [0027]-[0029]; Fig. 2), wherein the second network interface controller transmits the associated data field to the memory location (par. [0030]).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of AAPA in view of Craft and in further view of Oesterreicher by having the second network interface controller transmitting the associated data field to the memory location (instead of the program component, as taught by Craft) in order to offload processing of at least a portion of the packet from the program component to the network interface controller (par. [0008] in Boucher).

As to claims 5 and 19, AAPA in view of Craft, Oesterreicher, and Boucher shows that the program component is a computer operating system (par. [0009]; Fig. 1).

As to claims 7 and 21, AAPA in view of Craft, Oesterreicher, and Boucher shows that the first network interface controller and the second network interface controller operate under the RDMA protocol over TCP/IP protocol (par. [0003]-[0005] in AAPA; col. 2 lines 54-55, col. 3 lines 62-63 and col. 4 lines 40-42 in Craft).

As to claim 15, AAPA in view of Craft, Oesterreicher, and Boucher shows a computer readable medium having stored therein instructions for performing acts of method 1, as discussed above (col. 1 lines 5-10 in Craft).

7. Claims 2, 3, 16, and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Craft et al., in view of Oesterreicher et al., in view of Boucher et al., and in further view of Recio et al. ("An RDMA Protocol Specification (Version 1.0)") - submitted in the IDS dated 06/06/05, Doc. No.: A8.

As to claims 2 and 16, AAPA in view of Craft shows that the state of the CCB is updated when packet is processed (col. 6 lines 54-56 in Craft).

AAPA in view of Craft, Oesterreicher, and Boucher does not show that the identifier is invalidated under control of a bit field added to the identifier and the associated data field received from the second device.

Recio shows that the identifier is invalidated under control of a bit field added to the identifier and the associated data field received from the second device (page 12 lines 46-50; page 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of AAPA in view of Craft, Oesterreicher, and Boucher by having the identifier being invalidated under control of a bit field added to the identifier and the associated data field received from the second device in order to prevent a remote host from subsequent access to the memory location associated with the identifier, a well known feature of the RDMA protocol.

As to claims 3 and 17, AAPA in view of Craft, Oesterreicher, Boucher, and in further view of Recio shows that if the identifier has been invalidated, the associated

data field is discarded [invalidating STag prevents assess to a memory location associated with the identifier] (page 5 lines 15-24; page 12 lines 46-50; page 21 in Recio).

8. Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Craft et al., Oesterreicher et al., Boucher et al., and in further view of Starr et al. (US Patent No.: 6,807,581 B1).

As to claims 4 and 18, AAPA in view of Craft shows that storage (23) may be a separate category of the same memory as memory (21) (col. 2 lines 20-24 in Craft). AAPA in view of Craft, Oesterreicher, and Boucher does not explicitly show that the memory location is random access memory.

Starr shows that a memory may be composed of random access memory (col. 6 lines 10-14).

It would have been obvious to one of ordinary skill in the art to modify the method of AAPA in view of Craft, Oesterreicher, and Boucher by having the memory location of storage (23) in Craft being a random access memory in order to allow the stored data at the storage (23) of Craft to be accessed in any order, regardless of its physical location and whether or not it is related to the previous piece of data.

9. Claims 8-12, 14, 22-26, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA in view of Craft et al., in view of Oesterreicher et al., in view of Starr et al. and in further view of Recio et al.

As to claim 8, the preamble has been given patentable weight since the claim body refers back to the preamble. See "the first network interface controller" and "the host computer" at lines 2-3 of the claim body.

As to claim 8, AAPA shows a method for transferring control between a first network interface controller and at least a second network interface controller in a host computer including the first network interface controller and the second network interface controller [as the route the data takes through the Internet changes, it is possible that the path chosen from the first machine to the second machine will change in a manner that causes the path between these two machines to change from NIC 1 to NIC2 in machine 1] (par. [0005]), the method comprising:

receiving an identifier from a remote computer by the at least a second network interface controller [...the route changes to one which uses NIC 2 before machine 2 sends data to machine 1, machine 2 will return data with an STag that is unknown to NIC 2] (par. [0005]), the identifier generated by the first network interface controller and associated with a memory location in the host computer [the protocol associates the memory in the first machine with a handle referred to as a STag. ...a NIC in the first machine generates the STag. The STag is then sent to the second machine] (par. [0004]), wherein the second network interface controller has no knowledge of the identifier and the associated data field [returned data with an STag is unknown to NIC 2] (par. [0005]), and wherein the first network interface controller and the second network interface controller operate under a remote direct memory access (RDMA) protocol (par. [0003]-[0005]). AAPA further shows that identifiers are generated by the first

network interface controller and are associated with memory locations in the host computer [the protocol associates the memory in the first machine with a handle referred to as a STag. …a NIC in the first machine generates the STag].

AAPA does not show the particular steps recited in the claim for handling identifiers generated by one NIC and received by another NIC in the same machine, in cases when control is transferred [paths changed] between a first network interface controller and at least a second network interface controller in a multiple network interface device.

In particular, AAPA does not show:

sending a message to a program component indicating the reception of the identifier, the program component queries the first network interface controller for a list of identifiers;

passing the identifier received from the remote computer to the program component;

searching the list of identifiers for the identifier;

when the list of identifiers includes the identifier received from the remote computer, receiving a memory location associated with the identifier; and

when the list of identifiers does not include the identifier received from the remote computer, invalidating the identifier received from the remote computer.

Craft shows a method for transferring control between a first network interface controller and at least a second network interface controller in a host computer (abstract, col. 6 lines 36-42), the method comprising:

sending a message [the packet] to a program component indicating the reception of the identifier [INIC 22 sends the packet that it cannot process according to the fast-path connection to the INIC device driver, wherein a program component is interpreted to include at least one or more of the INIC device driver (64), the ATCP stack (62), and the port aggregation driver (66)] (col. 6 lines 43-47; Fig. 1), the program component queries the first network interface controller for a list of identifiers [commanding the INIC 25 to flush the fast-path CCB back to the ATCP stack, wherein CCB contains a list of identifiers] (col. 3 line 59 to col. 4 line 9; col. 6 lines 47-53); and

passing the identifier received from the remote computer to the program component [passing the packet that inherently contains the identifier in the header portion of the packet to the INIC device driver] (col. 4 lines 30-43; col. 6 lines 43-47).

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of AAPA and those of Craft, as discussed above, in order to provide a method of handling received packets when a packet received by one NIC is being handled by other NIC in the same device (col. 6 lines 36-42 in Craft).

AAPA in view of Craft does not explicitly show a packet containing an identifier in a header portion of the packet.

Oesterreicher shows that a packet contains an identifier in a header portion of the packet (par. [0034]; Fig. 5).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of AAPA in view of Craft by explicitly showing that a packet contains an identifier in a header portion of the packet, in order to determine

which device generated and transmitted the packet and where to place the packet data upon reception of the packet.

AAPA in view of Craft and in further view of Oesterreicher does not show:

searching the list of identifiers for the identifier;

when the list of identifiers includes the identifier received from the remote computer, receiving a memory location associated with the identifier; and

when the list of identifiers does not include the identifier received from the remote computer, invalidating the identifier received from the remote computer.

Starr shows:

searching the list of identifiers for the identifier [comparing packet summary with CCB hashes and CCB cache] (Fig. 3 step (110); col. 9 lines 40-44);

when the list of identifiers includes the identifier received from the remote computer, receiving a memory location associated with the identifier [if the packet summary matches a CCB, receiving a memory location according to a file system] (Fig. 3 steps (120) and (122); col. 9 lines 55-61); and

when the list of identifiers does not include the identifier received from the remote computer [if the packet summary does not match a CCB] (Fig. 3 step (110); col. 9 lines 44-46), [sending packet to stack for slow-path processing] (Fig. 3 step (112); col. 9 lines 44-46).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of AAPA in view of Craft and in further view of Oesterreicher by searching the list of identifiers for the identifier and taking an action in

response to searching, as discussed above, in order to determine whether or not received packet can be processed by the network interface controller (Fig. 3 of Starr).

AAPA in view of Craft, Oesterreicher, and in further view of Starr does not show invalidating the identifier received from the remote computer when the list of identifiers does not include the identifier received from the remote computer.

Recio shows invalidating the identifier received from the remote computer (page 5 lines 15-24; page 12 lines 46-50; page 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of AAPA in view of Craft, Oesterreicher, and in further view of Starr by invalidating the identifier received from the remote computer in order to prevent a remote host from subsequent access to the memory location associated with the identifier once the packet is processed, a well known feature of the RDMA protocol.

As to claims 9 and 23, AAPA in view of Craft shows that the state of the CCB is updated when packet is processed (col. 6 lines 54-56 in Craft).

AAPA in view of Craft, Oesterreicher, and Starr does not show that the identifier is invalidated under control of a bit field added to the identifier and an associated data field received from the remote computer.

Recio shows that the identifier is invalidated under control of a bit field added to the identifier and an associated data field received from the remote computer (page 12 lines 46-50; page 21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of AAPA in view of Craft, Oesterreicher, and Starr by having the identifier being invalidated under control of a bit field added to the identifier and an associated data field received from the remote computer in order to prevent a remote host from subsequent access to the memory location associated with the identifier, a well known feature of the RDMA protocol.

As to claims 10 and 24, AAPA in view of Craft, Oesterreicher, Starr, and in further view of Recio shows that if the identifier has been invalidated, the associated data field is discarded [invalidating STag prevents assess to a memory location associated with the identifier] (page 5 lines 15-24; page 12 lines 46-50; page 21 in Recio).

As to claims 11 and 25, AAPA in view of Craft shows that storage (23) may be a separate category of the same memory as memory (21) (col. 2 lines 20-24 in Craft). AAPA in view of Craft and Oesterreicher does not explicitly show that the memory location is random access memory.

Starr shows that a memory may be composed of random access memory (col. 6 lines 10-14).

It would have been obvious to one of ordinary skill in the art to modify the method of AAPA in view of Craft and Oesterreicher by having the memory location of storage (23) in Craft being a random access memory in order to allow the stored data at the

storage (23) of Craft to be accessed in any order, regardless of its physical location and whether or not it is related to the previous piece of data.

As to claims 12 and 26, AAPA in view of Craft and in further view of Oesterreicher shows all the elements except for the program component being a computer operating system.

Starr shows a program component being a computer operating system [file system (23)] (col. 6 lines 15-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of AAPA in view of Craft and Oesterreicher by having the program component being a computer operating system in order to utilize a high level software entity that contains general knowledge of the organization of information on storage units and file caches, and provides algorithms that implement the properties and performance of the storage architecture (col. 6 lines 15-19 in Starr).

As to claims 14 and 28, AAPA in view of Craft shows that the first network interface controller and the second network interface controller operate under the RDMA protocol over TCP/IP protocol (par. [0003]-[0005] in AAPA; col. 2 lines 54-55, col. 3 lines 62-63 and col. 4 lines 40-42 in Craft).

As to claim 22, AAPA in view of Craft, Oesterreicher, Starr, and in further view of Recio shows a computer readable medium having stored therein instructions for performing acts of method 8, as discussed above (col. 1 lines 5-10 in Craft).

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLEG SURVILLO whose telephone number is (571)272-9691. The examiner can normally be reached on M-Th 8:30am - 6:00pm; F 8:30am - 5:00pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Andrew Caldwell can be reached on 571-272-3868. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Examiner: Oleg Survillo

Phone: 571-272-9691

/Andrew Caldwell/
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